

REMARKS

Upon entry of the above amendment, claims 5-9, 13, 16-17 and 20-24 will be pending in the above-identified application and stand ready for further action on the merits, based on the cancellation of claims 10, 14-15 and 18-19 herein, and the addition of claims 20-24 herein.

In the instant amendment, claims 9 and 16-17 have been amended in accordance, e.g., with disclosure at page 6, line 24 and/or page 44, line 8 of the specification. Claim 13 has been amended to no longer depend on cancelled claims 14-15, and claim 20 has been added as a replacement to detergent granule claims 14-15 and 18-19, and recites that the detergent granules are "prepared by the method of claim 16 or 17". Claims 21-24 have been added based on disclosure at page 14, lines 13-18 of the specification.

Accordingly, no new matter is incorporated into the specification by way of said amendment. Moreover, the instant amendment does not raise any substantial new issues on the merits for the Examiner's consideration, and does not expand the scope of the invention previously considered and searched by the Examiner.

It is submitted that entry of the instant amendment is proper and fully acceptable under the provisions of 37 CFR 1.116, since the amendments made herein, could not earlier be presented (i.e.,

prior to the Examiner's issuance of the outstanding Final Office Action) and are at the same time believed necessary to put the application into condition for allowance, or alternatively, to put the application into better condition on appeal, for consideration by the honorable Board of Appeals of the United States Patent Office. (See MPEP § 714.12 - 714.13.)

Thus, it is respectfully requested that a full and proper consideration be given to the instant amendment and the following remarks that are provided in support of the patentability of the instant invention under the provisions of Title 35 of the United States Code.

***Interview with Examiner at USPTO***

Applicants appreciate the Examiner's courtesy in allowing their representatives interview with the Examiner on January 15<sup>th</sup> 2001. The present response was discussed with the Examiner in the interview, but several changes have been made thereto based on the interview discussions. For Example, claims 21-22 have been added to the application, and clearly recite ratios outside anything mentioned in Example 3 of Barletta (US 4,919,847).

***Claim Rejections Under 35 USC §102(b)/§103(a)***

Claims 5-10, 13, 14, 16, 18 and 19 stand rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative under 35 U.S.C. §103(a) as obvious over Barletta '847 (USP 4,919,847). Claims 5-10, 13, 15 and 17-19 stand rejected under 35 USC §103(a) over Barletta '847, and claims 5-6, 8-10 and 13-19 stand rejected under 35 USC §103(a) over Tadsen et al. '489 (USP 5,527,489). Reconsideration and withdrawal of each of these rejections is respectfully requested based upon the following considerations.

*The Present Invention and Its Advantages*

The present invention pertains to an advantageous dry-neutralizing method for making detergent granules and to detergent granules and detergent compositions so prepared. The detergent granules resulting from the process have low tackiness and a small particle size, with agglomeration of the produced granules being controlled in an advantageous manner.

Through the claimed method, the tackiness of the produced particles is controlled by forming an inorganic salt in a composite layer on the surfaces of the granules by dry-neutralization, wherein the molar ratio of the inorganic salt (sodium sulfate) to the non-soap, anionic surfactant is controlled in the composite layer, and wherein the larger the molar ratio of the inorganic

salt, the lower the tackiness of the granules produced (e.g., see page 37, lines 14-20; page 38, lines 18-22; and page 41, lines 5-8 of the specification).

Similarly, agglomeration of the produced granules is controlled through the microporosity of the granules, since by having a larger number of micropores in the granules, the amount of liquid content that can be retained in the micropores increases. As a result, excess agglomeration of the granules owing to bleeding out of the liquid starting materials during the production of granules can be suppressed (e.g., see page 41, lines 14-19 of the specification).

#### Distinctions Over the Cited Art

##### **Barletta '847**

The reaction product of the cited Barletta '847 reference is a liquid/paste detergent solution, which can be absorbed by carrier particles such as powdered bentonite. In order to provide such a reaction product, the Barletta '847 reference provides a wet-neutralization process for converting a detergent salt solution to a granular product. In the wet-neutralization process, an acid precursor for a detergent is neutralized to give a salt solution, and thereafter the derived salt solution is absorbed on carrier particles such as powdered bentonite. This process is very distinct

and different from a *dry-neutralization* process as recited in the present claims.

Further, in the cited Barletta '847 reference, neutralization and granulation are not carried out in a simultaneous manner as is done in *dry-neutralization* process like that instantly claimed. As a result, problems with respect to the agglomeration of granules and with the tackiness thereof, occur when using the process and method taught by Barletta '847. Such problems are not encountered when practicing the instant invention.

Additionally, in the instant invention, *dry-neutralization* is carried out using specific ratios of reactants and ingredients, which ratios of reactants and ingredients are not taught in, or otherwise disclosed, by Barletta '847. For example, in the instant claims, there is recited:

- (i) the presence of 0.1 to 1.0 mol (claim 16), or 0.3 to 1.0 mol (claim 17), or 0.3 to 0.8 (claims 21 and 23), or 0.35 to 0.7 (claims 22 and 24) of sulfuric acid per mol of the liquid acid precursor of a non-soap, anionic surfactant;
- (ii) that the resulting detergent granules contain the non-soap, anionic surfactant in an amount of 28% by weight or more and less than 50% by weight (claim 16) or in an amount of 15 % by weight or more and less than 28% by weight (claim 17); and

(iii) that the resulting detergent granules have a molar ratio of (inorganic salt undetectable by x-ray diffraction method)/(non-soap, anionic surfactant) of from 0.1 to 1.0 (claim 16), or 0.3 to 1.0 (claim 17).

At column 5, lines 25-35 Barletta broadly teaches that:

*Normally, as when linear dodecylbenzene sulfonic acid is the detergent acid charged, the concentration of sulf(on)ic acid will be from 80% to 100%, with from 0 to 20% of sulfuric acid... A typical linear dodecylbenzene sulfonic acid may have from 85 to 95% of sulfonic acid, 5 to 9% of sulfuric acid...*

Thus in the cited Barletta '847 reference it is merely taught that in the provided wet-neutralization process, one may utilize therein a linear dodecylbenzene that can contain some sulfuric acid therein, but with no specific limitation being placed on the molar ratio of the sulfuric acid to the surfactant, or any limitation being envisioned for a ratio of "sulfuric acid per mol of a liquid acid precursor of a non-soap, anionic surfactant" as is required in the instant claims.

Moreover, at column 5, as shown above, the Barletta teachings also provide that one may use 0% of sulfuric acid, which clearly teaches away from the instant invention, by providing that the use of sulfuric acid is optional at best.

Concerning Example 3 of Barletta '847 (see column 9, lines 40-57), the instant Inventors submit that the same only provides a sketchy description of the actual procedures used, but appears to be using a wet-neutralization step, similar to that used in Examples 1-2. In support of this contention, the Examiner is requested to compare the language in Example 3 of the Barletta '847 patent with the language of claim 11 of the Barletta's '847 patent (which claim reads like a recipe taken directly from Example 3 of the '847 patent).

Claim 3 and claim 11 of the Barletta patent are reproduced immediately below for the Examiner's convenience:

Example 3 of Barletta '847 (Column 9, lines 41-57)

In a further modification of the processes of this invention **23 parts of the sulfonic acid of Example 1 are mixed in "reactor" (51) and are sprayed into the absorption zone, wherein they impinge on swirling sodium carbonate particles** of size less than 140 sieve, with the proportion of sodium carbonate to sulfonic acid being 77:23. The sulfonic acid (and the accompanying sulfuric acid) is neutralized by the sodium carbonate, producing detergent salt, carbon dioxide, sodium bicarbonate and water, and leaving some of the carbonate unreacted. The effluent from the absorption zone is mixed, agglomerated and dried according to the method previously described in Examples 1 and 2, and the product is found to be satisfactory for mixing with spray dried base builder beads to make high bulk density built particulate detergent compositions. (*emphasis added*)

Claim 11 of Barletta '847 (Column 12, lines 17-28)

11. A process for manufacturing a particulate built detergent composition in a walled neutralizing zone which comprises reacting an anionic synthetic organic detergent acid with particulate sodium carbonate **by spraying such liquid detergent acid as droplets into the interior of moving particulate sodium carbonate particles** which are maintained in rotational movement between the detergent acid droplets and the wall of the neutralizing zone until substantially all of the detergent acid is neutralized by the sodium carbonate, resulting in particles of neutralized detergent salt with excess sodium carbonate thereon.**(emphasis added)**

Thus, upon reviewing the above two portions of the Barletta '847 patent in conjunction (as a means to clear up the sketchy description of Example 3), it becomes apparent that in Barletta's Example 3, a wet-neutralization process step was most likely utilized, rather than a dry-neutralization process step as contended by the Examiner.

Moreover, upon reviewing Barletta's Example 3, it is clear that the ratio of dodecylbenzene sulfonic acid to sulfuric acid used is 91:7 (or 1:0.077), which equates to a molar ratio of 1:0.25. Thus, even if the USPTO improperly disregards all other distinctions being presented herein between the Barletta reference's Example 3 and the instant invention as claimed, it surely cannot deny that the cited Example 3 of Barletta does not teach, disclose or otherwise utilize a molar ratio of dodecylbenzene sulfonic acid to sulfuric acid of greater than



1:0.25. Such a molar ratio is outside the molar ratios recited in each of the pending claims 17 and 21-24 {viz., 0.3 to 1.0 mol (claim 17), 0.3 to 0.8 (claims 21 and 23), or 0.35 to 0.7 (claims 22 and 24)}.

Moreover, to the extent that the USPTO may wish to contend that Barletta teaches other ratios of dodecylbenzene sulfonic acid to sulfuric acid, it is submitted that the same is always in the context of a *wet-neutralization* process or step (e.g., see column 5, lines 22-39 of Barletta), which is not part of the present invention as claimed.

Further, regarding Example 5 of the Barletta '847 patent, the same is nothing more than a prophetic paper example, based on Example 3, which at best simply suggests that one can change the proportion of certain ingredients in Example 3, but not the types of steps used in Example 3, or the molar ratios of sulfuric acid to surfactant noted above. Thus, prophetic Example 5 of the Barletta patent also possesses the same flaw or defect as Example 3, in that it also completely fails to provide for, or otherwise disclose, a process as instantly claimed, which uses a *dry-neutralization* step in conjunction with specified molar ratios of sulfuric acid per mol of the liquid acid precursor of a non-soap, anionic surfactant {viz., 0.1 to 1.0 mol (claim 16), 0.3 to 1.0 mol (claim 17), 0.3 to 0.8 (claims 21 and 23), or 0.35 to 0.7 (claims

22 and 24)} so that the advantageous effects of the instant invention can be obtained.

It is also submitted the abstract of the Barletta '847 patent, teaches and provides for a *wet-neutralization* process step, in its disclosure of:

"A particulate detergent composition, such as one comprising sodium linear higher alkylbenzene sulfonate (LAS) and bentonite, is made directly from anionic synthetic organic detergent acid by neutralizing such acid with a neutralizing agent, such as aqueous sodium hydroxide solution, in a reaction vessel **and directly discharging the neutralized detergent salt from the reaction vessel into an absorption zone wherein globules of the anionic detergent salt, in aqueous solution or dispersion**, and particulate solid carrier particles are rapidly circulated and repeatedly brought into contact with one another to produce detergent salt-carrier composition particles or agglomerates." (*emphasis added*)

even if it also later provides that:

"...instead of employing aqueous or liquid neutralizing agents, powdered solids may be used..."

since in all such cases, there is disclosed "directly discharging the neutralized detergent salt from the reaction vessel ... in an aqueous solution or dispersion," which necessarily implies that the neutralization is a *wet-neutralization*, even if the neutralizing agent itself is in a solid form.

As such it is submitted that those of ordinary skill in the art upon considering the whole of the Barletta '847 patent's

disclosure, would understand that the same does not provide for a *dry-neutralization* as recited in the present claims using specified molar ratios of sulfuric acid per mol of the liquid acid precursor of a non-soap, anionic surfactant, or for a product produced thereby.

Accordingly, since Barletta '847 fails to disclose a dry-neutralizing process as instantly claimed, including all the recited limitations thereof, and fails to provide for detergent granules or a detergent composition as instantly claimed, it follows that the Barletta '847 patent is incapable of anticipating the instant claims under 35 USC § 102. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Similarly, because Barletta '847 fails to provide any suggestion, teaching, disclosure or motivation to those of ordinary skill in the art to arrive at the instant invention as claimed, the outstanding rejection under 35 USC § 103(a) based on the Barletta '847 patent's disclosure cannot be maintained.

**Tadsen '489**

Tadsen '489 discloses a process for making a high-density granular detergent composition by forming a particulate composition comprised of a pH sensitive detergent surfactant. The process entails mixing and shearing the particulate composition to partially fluidize the composition, and dispersing into the fluidized particulate composition an alkylbenzene sulfonic acid containing 85% to 98% sulfonic acid, with the dispersion being done in a manner to achieve atomization of alkylbenzene sulfonic acid into fine droplets, thereby neutralizing the alkylbenzene sulfonic acid.

The USPTO contends that a skilled artisan would reasonably expect the molar ratio of sulfuric acid to alkylbenzene sulfonic acid to be within the limitation of the present invention, because Tadsen '489 discloses that the alkylbenzene sulfonic acid contains 85 to 98% sulfonic acid and 2 to 12% sulfuric acid. Applicants traverse this contention and request reconsideration thereof.

More particularly, applicants point the Examiner's attention to Tables 5-10 of the application (see pages 82-87) and the comments set forth at pages 88-90 of the instant disclosure, which portions of the specification evidence that the molar ratios recited in the claims of the present invention provide superior

results. In contrast to Applicants' teachings, and contrary to the instant invention as claimed, the Tadsen '489 reference recites broad ranges of contents of components without providing any guidance to the significance of the ranges. The prior art must suggest the desirability of making a modification in order for an Examiner to properly make a *prima facie* case of obviousness. In re Brower, 77 F.3d 422, 425-426, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995). Moreover, a proper *prima facie* case of obviousness must include in its basis, some motivation or suggestion to modify or combine references such that one of ordinary skill in the art has a reasonable expectation of success of making the present process.

"To prevent the use of hindsight based on the invention to defeat patentability of the invention, ... the examiner [is required] to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. In re Rouffet, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998)."

Accordingly, because Tadsen '489 fails to disclose or suggest essential elements as set forth in the claims and provides no motivation to arrive at the instant invention as claimed, it follows that a *prima facie* case of obviousness has not been properly made and cannot be sustained.

CONCLUSION

Applicants submit for the reasons stated above that the present claims define patentable subject matter such that this application should be placed into condition for allowance.

If the Examiner has any questions regarding the above matters, please contact Applicants' representative, John W. Bailey (Reg. No. 32,881), in the Washington, metropolitan area at the telephone number listed below.

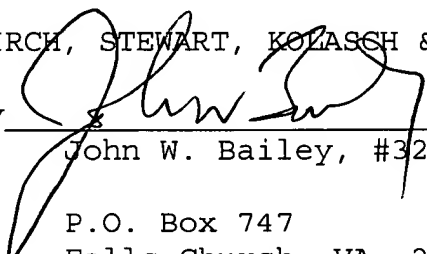
Attached hereto is a marked-up version to show changes made to this application by the amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By

  
John W. Bailey, #32,881

P.O. Box 747  
Falls Church, VA 22040-0747  
(703) 205-8000

JWB/end  
1422-0371P  
Attachment:

Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 10, 14-15 and 18-19 have been cancelled.

The claims have been amended as follows:

9. (Thrice Amended) The method according to claim 16 or 17, wherein an amount of [an inorganic] sulfuric acid preexisting in the liquid acid precursor of a non-soap, anionic surfactant is 0.09 mol or less per mol of said liquid acid precursor of a non-soap, anionic surfactant.

13. (Thrice Amended) A high-bulk density detergent composition having a bulk density of 500 g/L or more, comprising [the detergent granules according to claim 14 or 15, or the] detergent granules [obtainable] prepared by the method of [claims] claim 16 or 17.

16. (Amended) A method for producing detergent granules, comprising the step of dry-neutralizing a liquid acid precursor of a non-soap, anionic surfactant with a water-soluble, solid, alkali inorganic substance, wherein a dry-neutralizing step is carried out in the presence of 0.1 to 1.0 mol of [an inorganic acid] a sulfuric acid per mol of said liquid acid precursor of a non-soap, anionic

surfactant, and wherein the sulfuric acid is added to the starting material components, including the liquid acid precursor of a non-soap, anionic surfactant, and wherein the resulting detergent granules contain the non-soap, anionic surfactant in an amount of 28% by weight or more and less than 50% by weight, and have a molar ratio of (inorganic salt undetectable by x-ray diffraction method)/(non-soap, anionic surfactant) of from 0.1 to 1.0, and wherein the inorganic salt undetectable by x-ray diffraction method is sodium sulfate.

17. (Amended) A method for producing detergent granules, comprising the step of dry-neutralizing a liquid acid precursor of a non-soap, anionic surfactant with a water-soluble, solid, alkali inorganic substance, wherein a dry-neutralizing step is carried out in the presence of 0.3 to 1.0 mol of [an inorganic acid] a sulfuric acid per mol of said liquid acid precursor of a non-soap, anionic surfactant, and wherein the sulfuric acid is added to the starting material components, including the liquid acid precursor of a non-soap, anionic surfactant, and wherein the resulting detergent granules contain the non-soap, anionic surfactant in an amount of [15%] 10% by weight or more and less than 28% by weight, and have a molar ratio of (inorganic salt undetectable by x-ray diffraction method)/(non-soap, anionic surfactant) of from 0.3 to 1.0, and



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wherein the inorganic salt undetectable by x-ray diffraction method  
is sodium sulfate.

Claims 20-24 have been added.